







## Books (cont. from p. 965)

celestial radio catalogue at the millisecond level and for the simultaneous use of two frequencies during Very Long Baseline Interferometry (VLBI) sessions. The second paper, by K. J. Johnston and J. S. Ulvestad, was devoted to a celestial frame by comparing several radio source catalogues. Some useful recommendations are made for future works, particularly by proposing a set of about 40 sources to be observed by all investigators.

Two papers were related to the definition and maintenance of a conventional terrestrial system by space techniques, especially VLBI. S. Manabe's contribution was devoted to some numerical computations using several possible networks. In case of a VLBI network, simulations have shown that 80% of the actual station displacements were recovered for an eight-element network. The paper is not self-explanatory. The reader should first consult Y. Bock and Shen Yau Zhu's paper, which is a clear, general presentation of the problems (relations between inertial and terrestrial frames, combination of various techniques such as VLBI, SLR, and LLR, maintenance of a terrestrial frame for a deformable earth, choice of the estimation).

The paper by M. K. Fujimoto et al. dealt with relativistic modeling of reference frames. Relations between solar system barycentric, geocentric, and topocentric frames were discussed but formulas for the relation between only the last two are presented. Although very dense for a nonspecialist, this presentation is rather comprehensive and I recommend it.

Five papers belong to session 2 on earth rotation. The first one, by D. D. McCarthy et al., dealt with results of connected element interferometry. Present results are derived from only one baseline. They show an internal precision of 0.2–0.8 ms and an accuracy of 0.5–1.0 ms. As such results can be obtained only a few days after the observation time, they are particularly suitable for a rapid service. A second baseline and a better modeling of refraction will improve these results. Other papers covered the NGS Polaris system; the results of a global analysis of 10 years of VLBI data collected by the Deep Space Network; the Jet Propulsion Laboratory (JPL) TEMPO program for a rapid and operational determination of earth rotation parameters; and a pioneering VLBI experiment.

Three papers from session 3, on radio-interferometric surveying, are included in the proceedings. The first one, by C. Lundquist, reported VLBI determination of a 600-m baseline between two radio telescopes at Onsala, Sweden. Two experiments using a Mark III system show a sub-centimeter repeatability, and an agreement with a conventional survey better than 4 cm. A closure experiment with various trans-Atlantic baselines, Haystack–Ornala, performed between 1972 and 1978 shows a good agreement in length (2 cm) but a drastically worse agreement in orientation (up to 1 m in the Z component). More extensive treatments on this last result would have been helpful.

A second paper, by W. Beyer et al., described the European Radiointerferometry and Doppler Campaign (ERIDOC). Several

bandwidth synthetic Mark II experiments provided baselines between six European radio-telescopes with a repeatability better than 30 cm. Comparison with Doppler-derived baselines, using colocated receivers and DMA precise ephemerides, shows generally good agreement if one removes a scale and rotation bias. Nevertheless, the values of these parameters do not fully agree with those found by L. Hothem et al. in 1982. Further investigations about intercomparisons, especially on a full error budget, including local corrections, are needed.

The last paper, by D. W. Trusk et al., was devoted to results of the National Aeronautics and Space Administration/JPL mobile VLBI stations, used to survey some 17 sites in California from 1974.

Session 4 contained six papers devoted to VLBI systems. The first three covered the Mark III system; the next two described the Japanese K-3 system, fully compatible with Mark III; and the last presented the JPL/CIT correlator named Block II, which is also compatible with the Mark III system.

Session 5 provided five contributions on atmospheric and ionospheric propagation effects; session six, four papers on new instrumentation and techniques; and session seven contained five papers devoted to future plans.

This report will provide a good review of the state of the art of radio-interferometric techniques as applied to geodesy.

C. Boucher is with the Institut Géographique National, 94160 Saint-Mandé, France.

## AGU Congressional Science Fellowship

The individual selected will spend a year on the staff of a congressional committee or a House or Senate member, advising on a wide range of scientific issues as they pertain to public policy questions.

Prospective applicants should have a broad background in science and be articulate, literate, flexible, and able to work well with people from diverse professional backgrounds. Prior experience in public policy is not necessary, although such experience and/or a demonstrable interest in applying science to the solution of public problems is desirable.

The fellowship carries with it a stipend of up to \$28,000, plus travel allowance.

Interested candidates should submit a letter of intent, a curriculum vitae, and three letters of recommendation to AGU. For further details, write Member Programs Division, American Geophysical Union, 2000 Florida Avenue, N.W., Washington, D.C. 20009 or telephone 462-6903 or 800-424-2488 outside the Washington, D.C. area.

Deadline: March 31, 1984

University of Texas at Austin/Gerty Chair. The Department of Geological Sciences seeks a person at the rank of full professor to occupy the recently endowed Gerty Chair effective September 1, 1984. Teaching obligations include one undergraduate or graduate course each semester and the supervision of graduate students in the area of the person's interest. A wide range of courses for non-majors is desirable. The person's field of research must be one that is relevant to basic research to the exploration for hydrocarbons. The Gerty endowment will provide the chair holder with modest funds for support of travel and research activities. Applicants should submit a detailed resume, names and addresses of five references, and a statement of teaching and research interests by February 1, 1984 to Dr. E. F. McBratney, Chairman, Department of Geological Sciences, P.O. Box 7803, Austin, Texas 78712-7803.

The University of Texas at Austin is an Equal Opportunity/Affirmative Action Employer.

Geophysical, Tectonophysical/Georgia Tech. The School of Geophysical Sciences at Georgia Tech invites applications for a faculty appointment in Earth Sciences. The applicant must have an outstanding research potential as evidenced by several years of postdoctoral experience or a well-established research record, and experience in securing research funding. Although no field of specialization is excluded, preference will be given to randomized geophysical methods and/or petrophysics.

The School of Geophysical Sciences has an expanding and active research program in many areas of Earth and Atmospheric Sciences. The School has 23 full-time faculty members and over 50 graduate students.

Applications including resumes, phone numbers, and the names and addresses of at least three references should be submitted to Jean-Claude Marczak, Chair, Search Committee, School of Geophysical Sciences, Georgia Institute of Technology, Atlanta, GA 30332.

The Georgia Institute of Technology is a unit of the university system of the State of Georgia. Georgia Tech is an affirmative-action, equal-opportunity employer; women and minority applicants are encouraged to apply.

University of New Mexico/Mass Spectrometry. William and Mary expects to have a tenure-track opening at the assistant professor level for August 1984. Preference will be given to applicants in the fields of theoretical plasma simulation, computer simulation, nonlinear mechanics, or statistical mechanics. The physics department currently consists of 22 faculty, 7 postdoctoral research associates, and 40 Ph.D. candidate graduate students. Plasma physics funding is currently from NASA and the Department of Energy. Please send vitae and list of three references to: Chairman, Search Committee, Physics Department, College of William and Mary, Williamsburg, Virginia 23185.

William and Mary is an affirmative-action, equal-opportunity employer; women and minority applicants are encouraged to apply.

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William and Mary is an affirmative-action, equal-opportunity employer; women and minority applicants are encouraged to apply.

University of Washington/Paleontology/Paleobiology. The Department of Geological Sciences invites applications in the area of paleontology/paleobiology and geochemistry (especially economic or isotope geochemistry). We are interested in candidates who will establish exceptional and innovative research programs. Postdoctoral research experience is required. Applications are invited beginning September 1984. This is a tenure-track position at the rank of Assistant Professor or higher under exceptional circumstances. A second position may be available in September 1985. A paleontologist/paleobiologist may seek a joint appointment with the Burke Museum on campus. A successful candidate in either area will be expected to teach both undergraduate and graduate levels.

Applications including resumes, phone numbers, and the names and addresses of at least three references should be submitted to: Dr. Crayon J. Yapp, Department of Geological Sciences, University of New Mexico, Albuquerque, NM 87131. Closing date is January 1, 1984. The availability of this position is contingent on final budget approval.

The University of New Mexico is an equal opportunity employer.

University of Massachusetts, Amherst/Faculty Position in Structural-Mechanical Engineering. The Department of Civil and Environmental Engineering and the Department of Geology and Geophysics invites applications for a tenure-track position at the assistant professor level in stratigraphy/paleoceanography. Research and supervision of graduate students, particularly in these fields will be expected. Additional research interests in paleoceanography, paleogeography, and/or paleoclimatology are welcome.

Appointments are at the assistant or senior assistant level. Applications are invited for a tenure-track position at the rank of Assistant Professor or higher under exceptional circumstances. A second position may be available in September 1985. A paleontologist/paleobiologist may seek a joint appointment with the Burke Museum on campus. A successful candidate in either area will be expected to teach both undergraduate and graduate levels.

Applications including resumes, phone numbers, and the names and addresses of at least three references should be submitted to: Dr. John A. Barnes, Department of Civil and Environmental Engineering, University of Massachusetts, Amherst, MA 01003.

The University of Massachusetts is an affirmative-action, equal-opportunity employer.

University of California, San Diego/Analyst/Research Chemist. The Institute of Oceanography at the Scripps Institution of Oceanography, University of California, San Diego, anticipates opening for an ASSISTANT RESEARCH CHEMIST (salary range \$22,900–\$26,800) in the Food Chemistry Research Group. The primary responsibility of the position is to carry out fundamental research in marine organic chemistry in association with other IORR oceanographers.

The University of California, San Diego, is an equal opportunity/affirmative action employer.

Ohio State University/Mineralogist. The Department of Geology and Mineralogy invites applications for a tenure-track position in mineralogy or mineral chemistry/petrology (this is a position that has been created). The successful applicant will be expected to work with other members of the faculty in the fields of mineralogy, petrology, geochemistry, and economic geology.

A Ph.D. or equivalent is required. The successful applicant will be expected to teach graduate and undergraduate courses, conduct research, and supervise graduate students. Rank and salary will be commensurate with experience and research record.

Send resume and names of three referees by

Dr. Fred N. Spies, Director, Institute of Marine Resources, A-028 Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California 92093.

The University of California, San Diego, is an equal opportunity/affirmative action employer.

Sedimentary Biogeochemist/University of Hawaii. The Department of Oceanography and Hawaii Institute of Geophysics, University of Hawaii, are seeking a creative marine scientist for a tenure track position at the Assistant or Associate Professor level to work in seawater-mineral interactions. Applicants should have talents for investigation of problems involving both organic and inorganic phases.

The Department and Institute have a wide range of facilities available including research vessels and fully-equipped environmental chemistry, low-temperature geochemistry, and sedimentologic laboratories.

Applicants should have a Ph.D. in geochemistry or planetary science. Experience in mass spectrometry or radiochemistry is desirable.

The stipend is \$21,000–\$23,400 per year depending on experience and tax status. Begins on February 1, 1984 for 1, possibly 2 years. Send resume, two letters of recommendation, and a statement of research interests to: Thomas R. Widdowson, Dept. of Chemistry/Geochronology, Colorado School of Mines, Golden, Colorado 80401. Phone: (303) 273-3000.

CSM is an equal opportunity/affirmative action employer.

POSITIONS AVAILABLE

Colorado School of Mines/Research Fellowships. Research Fellowships in the isotopic geochemistry of extraterrestrial rocks. The study concentrates on nuclear geochemistry and geochemistry of Lu-Hf, Sm-Nd, Rb-Sr, and U-Th-Pb systems in meteorites, lunar samples, and other relevant terrestrial systems. This is a joint research program with the Colorado School of Mines and the U.S. Geological Survey. The appointee will perform most of the research at the USGS Isotope Branch, where up to date facilities are available for isotopic studies. Candidates should have a Ph.D. in geochemistry or planetary science. Experience in mass spectrometry or radiochemistry is desirable. The stipend is \$21,000–\$23,400 per year depending on experience and tax status. Begins on February 1, 1984 for 1, possibly 2 years. Send resume, two letters of recommendation, and a statement of research interests to: Thomas R. Widdowson, Dept. of Chemistry/Geochronology, Colorado School of Mines, Golden, Colorado 80401. Phone: (303) 273-3000.

CSM is an equal opportunity/affirmative action employer.

POSITIONS AVAILABLE

Hamilton College/Faculty Position. Applications are invited for a tenure-track position starting September 1, 1984 at the Assistant Professor level. This position will be in the department from three to four faculty members. We seek a person with a Ph.D. who is strongly oriented toward undergraduate teaching and whose field of training and interests are in any of the following fields: geophysics, low-temperature geochemistry, oceanography. Highly qualified candidates in other areas will also be considered. The successful candidate will be expected to contribute to introductory courses offered by the department, teach advanced undergraduate courses, and graduate teaching, guidance of research students, and personal research. Interested persons should send a resume and a statement of research interests and a list of three persons who can provide recommendations to: Dr. Keith E. Clark, Department of Oceanography, University of Iowa, Iowa City, IA 52242.

The University of Iowa is an equal opportunity/affirmative action employer.

POSITIONS AVAILABLE

University of Iowa/Faculty Positions. The Department of Physics and Astronomy anticipates two openings for tenure-track assistant, instructor or visiting faculty at any level in August 1984. In exceptional cases a term or tenured appointment at the assistant professor or professor level will be considered. Preference for one position will be given to an physicist. Courses in intermediate or high energy particle theory, quantum chromodynamics, and the following specialties in physics: atomic, condensed matter, elementary particle, laser, nuclear, plasma, and space physics. Faculty duties include undergraduate and graduate teaching, guidance of research students, and personal research.

Applications are invited for a tenure-track position at the rank of Assistant Professor or higher under exceptional circumstances. A second position may be available in September 1985. A paleontologist/paleobiologist may seek a joint appointment with the Burke Museum on campus. A successful candidate in either area will be expected to teach both undergraduate and graduate levels.

Applications including resumes, phone numbers, and the names and addresses of at least three references should be submitted to: Dr. Crayon J. Yapp, Department of Geological Sciences, University of New Mexico, Albuquerque, NM 87131. Closing date is January 1, 1984 for starting date 1 August 1984.

The University of New Mexico is an equal opportunity/affirmative action employer.

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University of Iowa/Faculty Positions. The Department of Physics and Astronomy anticipates two openings for tenure-track assistant, instructor or visiting faculty at any level in August 1984. In exceptional cases a term or tenured appointment at the assistant professor or professor level will be considered. Preference for one position will be given to an physicist. Courses in intermediate or high energy particle theory, quantum chromodynamics, and the following specialties in physics: atomic, condensed matter, elementary particle, laser, nuclear, plasma, and space physics. Faculty duties include undergraduate and graduate teaching, guidance of research students, and personal research.

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**The Johns Hopkins University/Quantitative Metamorphic Geologists.** The Department of Earth and Planetary Sciences invites applications for a joint research faculty position in some quantitative aspect of metamorphic petrology. Offer: 1. Prof. 2. Associate Prof. 3. Assistant Prof. 4. Instructor. The appointee will be expected to develop an active research program, and responsibilities will include undergraduate and graduate teaching and the supervision of doctoral candidates. Strong theoretical background and research record in the chemical, physical and physical aspects of metamorphism are required, as well as some field experience. Field experience is also desirable. Applications from women and minority candidates are encouraged.

To apply, send curriculum vitae, publications list, and the names of at least three referees to Dr. David R. Veblen, Dept. of Earth and Planetary Sciences, The Johns Hopkins University, Baltimore, MD 21218. Application deadline is January 15, 1984.

The Johns Hopkins University is an equal opportunity, affirmative action employer.

**Naval Postgraduate School, Faculty Positions/Meteorology.** The Department of Meteorology, Naval Postgraduate School, invites applications for a tenure-track and a non-tenure track position at the Assistant or Associate Professor level. The positions are in the fields of meteorology and oceanographic meteorology. The successful applicant will be expected to develop an active research program that complements his/her teaching. Rank and salary will be commensurate with the experience and qualifications of the successful applicant. Send a resume,

names and addresses of three references, and a statement of academic and research interests, including availability for a non-tenured position, by December 1, 1983 to: Professor R. J. Renard, Chairman, Department of Meteorology, Naval Postgraduate School, Monterey, California 93943. [Area code 408-646-2516].

The Naval Postgraduate School is an equal opportunity employer.

**Carnegie Institution of Washington/Continental Magnetism.** Extended postdoctoral fellowships in private institutions, emphasizing maximum freedom of research in areas of seismology, geophysics, isotope and trace element geochemistry, geochemistry, accelerator mass spectrometry, planetology, and star and planet formation. Renewable for second year. Complete application due February 1, 1984. For application form, Faculty Positions, Dept. 111, Dept. of Terrestrial Magnetism, Carnegie Institution of Washington, 5241 Broad Branch Road, N.W., Washington, D.C. 20015.

Women and minority candidates encouraged.

Carnegie Institution of Washington is an EOE/AE.

**Microprobe Technicians/South Dakota School of Mines and Technology.** Applications are invited for a position as microprobe technician for the Institute for the Study of Mineral Deposits. The microprobe is a ETEC (MAC-3) with 3 spectrometers and X-ray diffractometer. The successful applicant will be responsible for the day-to-day operation of the system. The successful applicant will be responsible for developing an active research program that complements his/her teaching. Rank and salary will be commensurate with the experience and qualifications of the successful applicant. Send a resume,

of minerals, and assistance to students. A background in geology, hydrology or engineering and specific coursework and/or experience in ground water hydrology and/or hydrogeology and three letters of recommendation to: Dr. John D. Bessler, Director, Institute for the Study of Mineral Deposits, South Dakota School of Mines and Technology, Rapid City, South Dakota 57701-3192. Closing date: March 31, 1984. For additional information, call (605) 394-6152.

SDSM&T is an affirmative-action/equal opportunity employer.

**United States Naval Academy-Annapolis/Remote Sensing Chair.** August 16, 1984 to June 15, 1985. Some variation of these dates is possible. Excellent opportunity for individual who desires to do research while teaching a high level in his field of expertise. The U.S. Naval Academy, located in Historic Annapolis on the shore of beautiful Chesapeake Bay, is near Washington, D.C. and Baltimore, MD. Salary commensurate with applicant's background. Considerable latitude of action exists in travel, publishing, etc. Within limitations funding for research and travel. Each Ph.D. required. Please send resume and list of publications along with the names and addresses of three referees to: Prof. John F. Hoffman, Chairman, Faculty Search Committee, Oceanography Department, U.S. Naval Academy, Annapolis, MD 21402. Closing date: March 1, 1984.

An Equal Opportunity Employer.

**Minnesota Pollution Control Agency/Hydrologist.** Applications are being accepted for a hydrologist position with the Minnesota Pollution Control Agency. The vacancy is in the metropolitan Minne-

apolis/St. Paul area. Applicant must have a background in hydrology, hydrogeology or engineering and specific coursework and/or experience in ground water hydrology and/or hydrogeology and three letters of recommendation to: Dr. John D. Bessler, Director, Institute for the Study of Mineral Deposits, South Dakota School of Mines and Technology, Rapid City, South Dakota 57701-3192. Closing date: March 31, 1984. For additional information, call (605) 394-6152.

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An Equal Opportunity Employer.

**NASA Traineeships.** The Florida State University is accepting applications for its NASA sponsored Traineeship Program in Oceanographic Remote Sensing Techniques and Physics of Air-Sea Interaction. The stipend for the calendar year is \$18,000. Students may be enrolled for a degree in either oceanography or meteorology. For further information or application, please write:

Dr. James J. O'Brien  
NASA Traineeship Program  
Metorology Annex  
The Florida State University  
Tallahassee, Florida 32306  
(904) 644-4381

important offices of the IAG: Ivan J. Mueller (Department of Geodetic Science and Surveying, Ohio State University) as first vice president; John D. Bessler (NOAA/NOS) as president of the section of positioning; and Richard Anderle (Naval Surface Weapons Laboratory) as president of the section on advanced space technology (see list below for these and other new IAG officers). The first vice president is a member of the IAG Bureau, while the section presidents are members of the Executive Committee. The fact that three Americans were elected to the Executive Committee is most unusual and reflects the dominant role that Americans play in international geodesy at this time.

The IAG delegated a approval 17 IAG and 6 IUGG resolutions, including statements of the currently most accurate geodetic constant, recommendations for location of collocated observations stations for different survey methods, a plan for the release of restricted gravity data, etc. (see list of IAG resolutions below).

John Wahr (age 26) of the University of Colorado won the esteemed Bomford Award, a prize for scientists under 40.

Ivan L. Mueller  
Ohio State University

angular velocity of the earth (rounded value):  
 $\omega = 7,292,115 \times 10^{-11} \text{ rad s}^{-1}$

geometric gravitational constant including the atmosphere:  
 $GM = (59,860,044 \pm 1) \times 10^9 \text{ m}^3 \text{ s}^{-2}$

geometric gravitational constant of the atmosphere only:  
 $GM_A = (55 \pm 0.5) \times 10^9 \text{ m}^3 \text{ s}^{-2}$

second degree harmonic coefficient (free from permanent tidal deformation):  
 $f_2 = (11,082,629 \pm 1) \times 10^{-9}$

equatorial radius of the earth:  
 $a = (6,378,196 \pm 1) \text{ m}$

equatorial gravity:  
 $g_0 = (978,032 \pm 1) \times 10^{-3} \text{ m s}^{-2}$

flattening ( $f$ ):  
 $f = (298,257 \pm 1) \times 10^{-4}$

geoidal potential:  
 $W_0 = (6,265,686 \pm 2) \times 10^9 \text{ m}^3 \text{ s}^{-2}$

maxillary parameters (rounded values)—equatorial flattening ( $f_1$ ):  
 $f_1 = 80,000$

longitude of major axis of equatorial ellipse:  
 $\lambda = 15^\circ \text{W}$

of ocean dynamics, and (2) many areas of the world have no gravity survey, including areas of great importance to the understanding of the earth's structure and evolution; and (3) many other areas do not have adequate gravity cover; considering that such improved gravity field information is most practically obtained from advanced satellite missions using satellite-to-satellite tracking or gravity gradiometry, recommends that all countries involved with space programs give high priority to such satellite missions.

6. Recognizing the important role that global satellite laser and radio tracking systems will have in the computation of precise orbits for future geodetic and oceanographic satellites, and noting that topics of central concern to orbit analysis are the determination of (1) the appropriate terrestrial reference frames for describing the tracking stations locations, (2) the precise location of the individual tracking stations in these reference frames, and (3) any scale and/or relative origin bias in the independent reference frames of the laser and radio tracking data, and considering the need for data from such systems grouped at common sites to resolve any scale and/or origin bias, recommends that particular efforts be made to group radio and laser tracking systems at common sites during future international tracking campaigns with emphasis on achieving global coverage for the collocated systems.

7. Recognizing the general need for establishing orbits for altimeter satellites in support of investigations in geodesy and oceanography, and noting (1) the particular contributions that such altimeter satellites as ERS-1, Poseidon and TOPEX may make to efforts to understand the general ocean circulation, and (2) that all these satellites are planned to be in orbit during the same period (1987-1993), recommends that cooperative global tracking campaigns be organized to provide the data sets for precise orbit computations for the satellites.

8. Recognizing the increasing importance of precise, space-related positioning systems such as those of laser ranging and very long baseline interferometry (VLBI) for investigations of the kinematics and dynamics of the earth and its environment, recommends that national authorities extend their support to the development and operation of these systems.

9. Recognizing the importance in mountain areas of precise gold determination by a combination of astrometric, gravimetric and other data, and noting the progress achieved in this respect over various regions and the development of new observational and theoretical methods, recommends the active continuation of that work and its support by national authorities.

10. Recognizing the existence of global and regional satellite programs using space techniques for positioning, such as MERIT/GOTW and the critical dynamics project initiated by NASA, and recognizing the significance of such programs for long-term kinematic and dynamic investigations of the earth and its environment, and considering that (1) the success of such programs critically depends on the establishment and maintenance of networks of terrestrial observing stations, and (2) with stations may be intermittently occupied by a variety of instruments mounted over a total time span of possibly several decades or longer, strongly urges the countries involved in such establishment and maintenance to devote utmost care to station selection, monumentation and survey strategy, so as to enable unambiguous reoccupation to an accuracy compatible with the scientific objectives of the programs.

11. Recognizing that the need for the uniform treatment of tidal corrections to various geodetic quantities such as gravity and station position, and considering the report of the Standard Earth Tide Committee and SSG 2.25 Predictive Methods for Space Techniques, presented at the 18th General Assembly, recommends that (1) the atmospheric pressure corrections refer to a common Standard Atmosphere, with the sensitivity coefficient being  $-0.310 \text{ m}^{-1} \text{ s}^{-4} \text{ mb}^{-1}$  ( $-0.3 \text{ } \mu\text{Gal}/\text{mb}$ ), unless it is determined by special investigations, in which case the value used must be published together with the results. The closed formula for the computation of this Standard Atmosphere will be published in a future issue of the Bulletin d'Information du Bureau Central International de la Terre (B.I.T.). (2) the atmospheric pressure corrections refer to a common Standard Atmosphere, with the sensitivity coefficient being  $-0.310 \text{ m}^{-1} \text{ s}^{-4} \text{ mb}^{-1}$  ( $-0.3 \text{ } \mu\text{Gal}/\text{mb}$ ), unless it is determined by special investigations, in which case the value used must be published together with the results. The closed formula for the computation of this Standard Atmosphere will be published in a future issue of the Bulletin d'Information du Bureau Central International de la Terre (B.I.T.). (3) the gravity gradient corrections be published with the adopted local gradient and/or the adopted height difference so that the original values may be recovered.

12. Recognizing the excellent organization of the Hamburg General Assembly, and the efficient administrative arrangements which made an invaluable contribution to its scientific success, expresses its grateful thanks to its German hosts for their successful efforts in making its meeting so pleasant and scientifically profitable.

Officers

Bureau

President: P.-V. Anger-Leppan (Australia); First Vice President: I. J. Mueller (USA); Secretary General: M. Louis (France)

Sections, Commissions, Special Study Groups, Permanent Services

Section 1: Positioning

President: J. D. Bessler (USA); Secretary: H. Hennberg (Venezuela); M. Prilepin (USSR); J. Y. Chen (China)

Commission 10: Continental Networks

President: J. Kakkuri (Finland); Subcommissions: European Triangulation (RETRIG); President, K. Poder (Denmark); Secretary, Deutsches Geodätische Forschungsinstitut (DFG), European Levelling (UEL); President, A. Waalewijn (Netherlands); Secretary, E. Gubler (Switzerland); North American President: J. D. Bessler (USA); Secretary, D. MacLean (Canada); South American President: D. Ferrari (Brazil); Secretary, J. M. Diaz (Gijón); Southeast Asia and Pacific President: C. Venkatram (Australia); Secretary, J. Rata (Indonesia); Indian Subcontinent and President: M. G. Aru (India); Western Asia President: R. M. Jaffal (Jordan).

Special Study Groups

1-89: Computer assisted design of geodetic networks; President: W. Baran (Poland); 1-78: Marine positioning; President: D. E. Wells (Canada); 1-75: Integrated geodesy; President: G. W. Helm (FRG); 1-76: Comparison of methods of analysis and evaluation of leveling errors; President: A. M. Wasel (Egypt); 1-76: World vertical reference system; President: R. H. Rapp (USA); 1-77: Poidding with GPS; President: C. Goad (USA); 1-77: Utilization of inertial techniques for geodesy; President: K. P. Schwartz (Canada); 1-78: Auropean effect on terrestrial geodesy; President: H. Kahnen (FRG); 1-79: Geodetic boundary value problems in establishing gravity field approximations on a sound theoretical basis as well as producing quick and stable first order solutions, and noting the progress made in this field, recommends (1) that analysis of fundamental problems such as the Molodensky problem be pursued to a reasonable conclusion, including nonlinear cases; (2) that newly defined mixed boundary value problems, especially those of climatology/gravity, be investigated with numerical approaches to establish the applicability of solutions; and (3) that geodetic boundary value studies, begun over the last few years, now model the mechanics of planet earth in a unified field theory.

14. Recognizing recent studies of the local geological properties of the earth's gravity field using different methods in such a way that geodetic measurements

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**AGU**

## Actions at Hamburg

### International Association of Hydrological Sciences

#### Symposia

The proceedings of two of the five IAHS symposia at Hamburg were prepublished: *Dissolved Louts of Rivers and Surface Water Quality/Quality Relationships and Hydrology of Humid Tropical Regions with Particular Reference to the Hydrological Effects of Agriculture and Forestry Practice*. These can be purchased from the Office of the Treasurer, 2000 Florida Avenue N.W., Washington DC 20009. The remaining proceedings will be published in 1984.

#### Resolutions

Reproduced below are resolutions adopted by IAHS during the 18th General Assembly of the International Union of Geodesy and Geophysics (IUGG) in Hamburg, August 15-27, 1983.

The following comments are from Secretary General Rodda:

The Working Group referred to in Resolution 2/2, the so called Hydrology 2000 Working Group, consists of the following members: D. N. Collins (UK), S. I. Haswan (Lybia), L. T. Coetzsch (Sweden), Z. Kundzewicz (Poland), A. Szollosi-Nagy (Hungary), E. D. Andrews (USA), B. Webb (UK), and A. Aranda (People's Republic of Benin). A small subcommittee was formed to consider the exact terms of the Tison Award. It consists of I. Rodriguez-Iturbe, A. I. Jolanius, and T. O'Donnell.

The following commission and committee presidents and secretaries were elected: International Commission on Continental Erosion D. E. Walling president and R. F. Hudec secretary; International Commission on Groundwater H. J. Golenbawder president and S. M. Gorelick secretary; International Commission of Snow and Ice L. Libby president and C. Wakashima secretary; International Commission on Surface Water H. L. Lieschner president and A. Szollosi-Nagy secretary; International Commission on Water Quality: G. Mathew president and D. Rickert secretary; International Commission on Water Resource Systems M. Hamlin president and L. T. Coetzsch secretary; International Committee on Remote Sensing and Data Transmission A. I. Johnson president and B. E. Goodison secretary.

A third resolution was concerned with strengthening the position of hydrologists and IAHS within IUGG. In the past, few of the IUGG officers have been hydrologists, and currently none of the members of the IUGG council, which is composed largely of chairmen of IUGG national committees, is a hydrologist. The same applies to several of the other disciplines represented in IUGG. This resolution was passed by the IAHS Assembly but was withdrawn because of certain difficulties foreseen by delegates from several countries.

#### New Officers

H. J. Peiris reports that a major change was made in the way the officers of the commissions of the association are selected. In the past, nominations for all IAHS officers and all commission officers were submitted to the Nominating Committee, which prepared a slate of nominees presented to the plenary session.

Under the new system, agreed upon at Exeter in 1982, ratified at the plenary session on August 15, 1983, and used, for the first time, at the Hamburg assembly, commission officers are elected in the individual plenary meetings of the commissions and these elections are not subject to review or ratification by the IAHS plenary meeting.

This change is expected to produce improved continuity of officers and greater autonomy for the commissions. The IAHS Nominating Committee reviewed the commissions' slates of nominees prior to announcements to assure geographical balance in the IAHS as well as the more advanced techniques, i.e., VLBI and SLR.

It has been a truism that at previous IUGG General Assemblies the European geodetics concentrated on theory, while Americans emphasized new technology. In general, this separation now seems to be much less pronounced. There is a much closer community of interests among these groups compared to years ago. The interest of Europeans in Very Long Baseline Interferometry, Global Positioning Systems, etc. is now very strong, and they are eager to apply these new methods, developed in the U.S., as efficiently as possible.

In the same vein, whereas at previous general assemblies the role of countries other than those in North America or Europe was negligible, other parts of the world, especially Japan and China, are proving themselves prominent participants in the geodetic community. The so-called developing countries are also asserting quite loudly their geodetic requirements (e.g., African Doppler Survey). All this means that international cooperation is more important than ever in sharing resources and information, both at individual and organizational levels.

Another interesting highlight was the presentation by Bernd Richter, Institut für Angewandte Geodäsie, on "Tide Spectrum." It appears that the cryogenic gravity meter record there contains a clear signature of polar motion. Richter only compared the record to the IAU polar motion series, but a very preliminary look at the structure in due results suggests

## AGU (cont. from p. 969)

Optical long base Interferometry for geodesy and geodynamics: President, M. Prilepin (USSR).

## Section 2: Advanced Space Technology

President: R. Andere (USA); Secretary: B. Kofcak (Poland); P. Wilson (FRG).

Commission 8: International Coordination of Space Techniques for Geodesy and Geodynamics

President: I. F. Mueller (USA), until June 1984; C. Reigber (FRG), after June 1984.

## Special Study Groups

2-85, Satellite radio-tracking techniques: President, B. E. Schutz (USA); 2-81, Specification of methods for handling systematic errors arising from satellite laser ranging instrumentation: President, J. Gagnepain (France); 2-82, Compression and smoothing of data obtained from space techniques: President, D. Legegnan (FRG); 2-83, Data analysis methods for satellite-to-satellite tracking and satellite gravimetry: President, R. Rummel (Netherlands); 2-84, Atmospheric effects on geodetic space measurements: President, F. Brunner (Switzerland).

## Section 5: Determination of the Gravity Field

President: W. Torge (FRG); Secretary: C. Tscherning (Denmark); I. Nakagawa (Japan).

## Commission 3: International Gravimetric Commission

President: J. Tanner (Canada).

## Special Study Groups

3-85, Comparison of high-precision relative gravimetry techniques: President, F. Crotti (FRG); 3-86, Evaluating of absolute gravity measurements: President, V. Boulaire (USSR); 3-87, Development of a new world absolute gravity network: President, G. Bocquier (FRG); 3-88, Determination of the geoid in Europe: President, C. Borsig (Italy); 3-89, Observation and adjustment procedure in dynamic gravimetry: President, J. Makris (USA); 3-90, Evaluation of local gravity field determinations: President, C. Tscherning (Denmark).

## Section 4: General Theory and Methodology

President: E. Crafend (FRG); Secretary: K. P. Schwarz (Canada); F. Sanso (Italy).

## Special Study Groups

4-85, Differential geometry of the gravity field: President, E. Liveratos (Greece); 4-87, Boundary-value and convergent problems in physical geodesy: President, P. Holota (Czechoslovakia); 4-88, Statistical methods for estimation and testing of geodetic data: President, B. Fritsch (FRG); 4-89, Geodetic data base management: President, A. Frank (USA); 4-71, Optimal design problems: President, G. Schmitz (FRG); 4-91, Local gravity field approximation: President, H. Sunkel (Austria); 4-92, Global gravity field approximation: President, L. Sjöberg (Sweden); 4-93, Theory of geodetic reference frames: President, J. White (USA); 4-95, Multi-body force function—geodetic aspects of astrodynamics: President, M. Sidić (Czechoslovakia); 4-96, Models for time-dependent geodetic positioning: President, P. Vaníček (Canada).

The Executive Committee consists of the Bureau, the Immediate Past-President, the Vice Presidents, and the Presidents of Sections. The secretary of Sections, the editor-in-chief of

## Section 5: Geodynamics

President: H. Kauselben (CDR); Secretary: H. Kahl (Switzerland); D. MacCarthy (USA).

## Commission 8: Earth Tides

President: J. Kuo (USA); Secretary: P. Melchior (Belgium).

## Commission 7: Recent Crustal Movements

President: P. Vykotil (Czechoslovakia).

## International Center of Earth Tides (affiliated to FAGS)

Director: P. Melchior (Belgium).

## International Polar Motion Service (affiliated to FAGS)

Director: K. Yokoyama (Japan).

## International Service of Mean Sea Level (affiliated to FAGS)

Director: D. T. Pugh (UK).

## Bureau International de l'Heure (affiliated to FAGS)

Director: B. Culot (France).

## International Center of Recent Crustal Movements

Director: P. Vykotil (Czechoslovakia).

## Special Study Groups

8-87, Crustal anomalies and geodynamics of mountain belts: President, H. Kahl (Switzerland); 8-98, Atmospheric excitation of earth's rotation: President, J. O. Dickey (USA); 8-99, Tidal function and earth rotation: President, M. Bursig (Czechoslovakia); 8-100, Parameters of common relevance of astronomy, geodesy, and geodynamics: President, B. H. Chovia (USA).

## Out of Section

## Commission 6: International Geodetic Bibliography

President: L. Stange (CDR); Secretary: C. Boucher (France).

## Commission 9: Education in Geodesy

President: E. Kralikov (Czechoslovakia).

## Commission 11: Geodesy in Africa

President: A. Cisse (Côte d'Ivoire); Secretary: O. Fadahumi (Nigeria).

## Special Study Group 0-87: History of Geodesy

President: C. Whiten (USA).

## Other Official Positions

Immediate Past-President: H. Moritz (Austria); Second Vice-President: M. Bursig (Czechoslovakia); Third Vice-President: G. Lachapelle (Canada); Editor-in-Chief of the *Bulletin Géodésique*: I. J. Mueller (USA); Assistant Secretary: C. Boucher (France); K. Daugherty (USA); J. Kryszki (Poland); Honorary Presidents: C. Whiten (USA); C. Bonfield (UK); A. Mansfield (UK); Y. Boulaire (USSR); T. J. Kukacka (Finland); and H. Monitz (Austria); Honorary Secretary General: J. J. Levitt (France).

The Executive Committee consists of the Bureau, the Immediate Past-President, the Vice Presidents, and the Presidents of Sections.

The secretary of Sections, the editor-in-chief of

the *Bulletin Géodésique*, the assistant secretaries, the honorary president, and secretary general may attend the meetings of the Executive Committee, with voice but without vote.

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Optical long base Interferometry for geodesy and geodynamics: President, M. Prilepin (USSR).

International Association for Hydraulic Research and the United Nations Educational, Scientific, and Cultural Organization will hold a Seminar on Water Management Practice in Zaria, Nigeria, July 30-August 2, 1984. Papers should be submitted for the seminar by January 1984.

Measuring topics will include water resources management, socio-economic problems (particularly in developing countries) in water management, rural water supply development, and models for water demand analysis, for water allocation, and for water quality management.

The final report will be edited by G. Römling, University of Alaska, Fairbanks; and L. Broadfoot, University of Arizona, Tucson. Additional input from the scientific community for inclusion in the report should be directed to the appropriate person listed above.

A guide to help AGU members communicate with legislators and government agency officials is available free of charge from AGU headquarters. The guide is based on the premise that input from the scientific community assists government to make decisions based on the latest factual information available.

*AGU's Guide to Legislative Information and Contacts* was developed by AGU's Committee on Public Affairs and is based largely on a publication of the American Institute of Biological Sciences. The guide briefly outlines the key steps in the legislative process and lists sources of information on legislation. The booklet also provides guidelines for corresponding with legislators and for providing scientific testimony to Congress. It also delineates some of the constraints under which AGU must operate when undertaking legislative activities.

The booklet spells out how to get copies of bills, hearing proceedings, committee reports, laws, government regulations, and legal notices. Copies of bills, for example, may be requested from the legislator who introduced the bill or from the House or Senate Documents Room. *The Congressional Record* also carries the text of bills introduced. Staff members of congressional committees, though quite busy, often are good sources of information. Names and addresses of legislators, congressional committees, and executive officials can be gleaned from the *Congressional Directory* and *The United States Government Manual*, the guide says. Both are available from Government Printing Office (GPO) bookstores, which are located in 11 cities nationwide. To obtain a list of the locations, write to the Superintendent of Documents, Washington, DC 20402.

In addition to obtaining information about current legislation, AGU members may wish to express their opinions as individuals on pending legislation affecting geophysics. Letters from scientists who know the implications of issues and are familiar with the local situation can be especially valuable to legislators in considering how to vote on important issues. To be most effective, the new AGU guide recommends, letters to congressmen should be courteous, brief, to the point, and should address one issue per letter. Familiarity with the specifics of proposed legislation before reacting to it is essential.

For more information about the guide, contact AGU Member Programs at (202) 462-6903—BTR.

Based on the publication *A Guide for Providing Scientific Testimony* by Arthur Grimes of the American Institute of Biological Sciences, the guide also reviews the AGU council's position concerning AGU's role in advocacy on public issues. (See, *EOS*, Aug. 2, 1982, p. 44b.)

The guide also reviews the AGU's tax-exempt status.

Based on the publication *A Guide for Providing Scientific Testimony* by Arthur Grimes of the American Institute of Biological Sciences, the guide also reviews the AGU's tax-exempt status.

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